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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,257	10/24/2003	Robert J. Custer	28679/05116	9079

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EXAMINER	
THOMAS, LUCY M	
ART UNIT	**PAPER NUMBER**
2836	

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/693,257	CUSTER ET AL.
	Examiner	Art Unit
	Lucy Thomas	2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/05/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features must be shown clearly or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 12 and 19 are objected to because of the following informalities: Regarding claim 12, the phrase "selectable" renders the claim indefinite because it is unclear from the claim how the output voltage is selectable.

Recitation of "a second field effect transistor operates independently of the first field effect transistor" in lines 2-3 of Claim 19 is in conflict with what is disclosed as the invention as it has been noted that the second field effect transistor is controlled as a function of the state of the first field effect transistor.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strayer et al. (US 6,922,322) in of SAE J1455 (August 1994). Regarding Claim 1, Strayer et al. discloses an electrical transient protection circuit in a vehicle (Figures 1 and 2), comprising: an input connector receiving an input voltage (see 122 in Figures 2 and 3); means for absorbing 140, 142, 144 electrically connected to the input connector; means for blocking 120, 130 electrically connected to the input connector, and at least one of the means for absorbing and means for blocking conditioning the input voltage by suppressing a voltage transient and producing a corresponding output voltage, and

an output connector (see 124 in Figure 2 and 132 in Figure 3) delivering the output voltage, to an electrical component of the vehicle (Column 4, lines 59-67, Column 5, lines 1-5). Although the reference does not show the input or output connectors, it would have been obvious to provide the electrical transient protection circuit with said input and output connectors to provide a reconfigurable electrical interface between the electrical transient protection circuit and the device that it is protecting. Strayer et al. does not disclose the voltage transients being up to i) about 8 times the input voltage through a source impedance of about 0.4 ohm for about 0.5 seconds, ii) about 50 times the input voltage through a source impedance of about 20.0 ohm for about 1.0 millisecond, and iii) about 50 times a negative of the input voltage though a source impedance of about 20.0 ohm for about 1.0 millisecond, and that the output voltage is less than and equal to about 10%above the input voltage. The voltage transients disclosed are American National Standards for load dump and inductive switching in vehicles and can be found in industry documents (Page 36, Table 4A, Table 4B, SAE J1455). With regard to the voltage transient, it can be recognized from the established standards that the range of the voltage transient would fall into the ranges specified by the standards. It is understood that the output voltage would be about 10% above the input voltage to accommodate the tolerances associated with the circuit components so that the output voltage is less than about 110% of the input voltage.

Regarding Claim 2, Strayer et al. discloses the electrical transient protection circuit, wherein the means for absorbing includes a metal oxide varistor (Column 6, lines 47-54), and the means for blocking includes a field effect transistor 120, 130 (Column 4,

lines 52-67, Column 5, lines 33-42). Regarding Claim 3, Strayer et al. discloses the electrical transient protection circuit, wherein the means for absorbing absorbs a first portion of the voltage transient and the means for blocking blocks a second portion of the voltage transient; and the second portion may represent up to all of the voltage transient (Column 6,lines 9-46). Regarding Claim 4. Strayer et al. discloses an n-channel switching field effect transistor 130 (Column 5, lines 5-9).

Regarding Claim 5, Strayer et al. fails to disclose a p-channel switching field effect transistor. It is obvious to those skilled in the art to use a p-channel switching field effect transistor instead of an n-channel switching field effect transistor and configure the circuit accordingly, for applications which require less electrical current as p-channel switching field effect transistor would be more suitable in this case. Regarding Claim 6, Strayer et al. discloses the means for absorbing which includes a transient voltage suppressor 142 (Column 6, lines 35-38, 47-54). Regarding Claim 7, Strayer et al. discloses the electrical transient protection circuit further including a field effect transistor 120 having a body diode electrically oriented for blocking a negative of the input voltage (Column 5, lines 1-4). Regarding Claim 8, Strayer et al. discloses the electrical transient protection circuit, wherein the means for blocking controls an electrical connection between the input connector and the output connector as a function of the voltage transient (Column 5, lines 1-4). Regarding Claim 9, Strayer et al. discloses the electrical transient protection circuit, wherein the means for absorbing and means for blocking operate independently of each other (Column 6, lines 9-47).

Claim 10 differs from Claim 1 in that Claim 10 is limited only as an over voltage transient protection circuit instead of an electrical transient protection circuit as Claim 1, and the output voltage is limited to less than about 200%, instead of 110% as in Claim 1, of the input voltage. Since Claim 10 recites the broader limitation, it may also rejected on the same basis as Claim 1. Regarding Claim 11, Strayer et al. discloses the over voltage transient protection circuit, wherein the means for absorbing includes a first field effect transistor 130 having a drain electrically connected to the input voltage, and further including a second FET 120 having a source connected to the source of the first transistor and gate electrically connected to the gate of the first transistor, a state of the first transistor being controlled as a function of the input voltage, and state of the second transistor being controlled as a function of a state of the first transistor, the second FET providing the protection against a negative input voltage (Figure 3, Column 6, lines 9-25). Regarding Claim 12, Strayer et al. discloses the over voltage transient protection circuit, wherein the first FET is rated about 150 volts and the second FET is rated up to about 150 volts (Column 6, lines 29-35). Regarding Claim 13, Strayer et al. discloses the over voltage transient protection circuit, wherein the means for absorbing includes a metal oxide varistor and the means for blocking includes an n-channel field effect transistor (Column 6, lines 47-54, Column 5, lines 5-9). Regarding Claim 14, Strayer et al. discloses the over voltage transient protection circuit, wherein other circuit components including metal oxide varistor, except the MOSFET 130, would only need to be rated 32 volts, which is below the recited 150 volts. Regarding Claim 15, Strayer et al. discloses the over voltage transient protection circuit, wherein the metal oxide

varistor absorbs a first portion of the voltage transient and the n-channel filed effect transistor blocks a second portion of the voltage transient, and the second portion may represent up to all of the voltage transient (Column 6, lines 9-25).

Claim 16 basically recites elements of Claims 1 except that the output voltage is limited as being selectable in Claim 16 compared to corresponding in Claim 1. Therefore, please refer to the above rejection of Claim 1. Additionally, the output voltage disclosed in Claim 1 depends on the input and therefore may be considered to be selectable, as the output would be based on the input and components used in the circuit. Claim 17 recites the elements of Claim 9 and Claim 18 recites the elements of Claim 2 with additional limitation of 150 volts rating for the MOV as recited in Claim 14 and 150 volts rating for a first FET as recited in Claim 12. As noted above, the first FET is rated about 150 volts and MOV is rated at 32 volts, which is less than 150 volts. Claim 19 recites the means for blocking which includes a second field effect transistor as recited in Claim 11, and the second part of Claim 19 is in conflict with the invention as disclosed by the Applicant as the second FET is connected to the first. Clam 20 basically recites elements of Claim 15. Therefore, please see the rejection of Claim 15. Claims 21-24 basically recites an electrical transient protection circuit with elements disclosed in Claims 1-15. Therefore, please refer to the above rejection.

Regarding Claims 25-29, the recited method steps would necessarily be performed when implementing the electrical transient protection circuit recited in Claim 1. For example, regarding Claim 26, Strayer et al. discloses said absorbing which includes absorbing the second portion of the voltage transient having about 600 Volts

said blocking which includes the first portion of the voltage transient having about 150 Volts (Column 6, lines 26-46). The recited about 600 Volts is the transient voltage as set by the industry standard, and 150 Volts is the resultant of voltage division across the source impedance and the blocking means.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy Thomas whose telephone number is 571-272-6002. The examiner can normally be reached on Monday - Friday 8:00 AM - 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT
October 12, 2005

PHUONG T. VU
PRIMARY EXAMINER